AMENDMENTS TO THE ABSTRACT

Please cancel the Abstract section of the specification and replace with the following Abstract that is shown in amendment form:

~~Initial binary data to be communicated or stored is obtained, and a characteristic Hamming weight of the initial binary data is determined. A comparison is then made between the characteristic Hamming weight and a predetermined value, and the initial binary data is processed based on the comparison to thereby develop processed binary data having a Hamming weight not less than the characteristic Hamming weight of the initial binary data. A communication encoding apparatus includes a data input for receiving initial binary data having a characteristic Hamming weight and a processor in communication with the data input for determining the characteristic Hamming weight of the initial binary data. The processor also performs a comparison of the characteristic Hamming weight of the initial binary data with a predetermined value and processes the initial binary data based on the comparison to thereby develop processed binary data having a Hamming weight not less than the characteristic Hamming weight of the initial binary data.~~ A Hamming weight encoder includes an input that receives user data including P symbols and a Hamming weight module that determines a Hamming weight of N of said P symbols. N and P are integers greater than one and N is less than or equal to P. The Hamming weight encoder also includes a comparing module that compares the Hamming weight to a Hamming weight threshold and an inverting module that selectively bitwise inverts bits in said N symbols based on said comparison.